



UNIVERSAL NODE UN2011

OPERATING AND INSTALLATION MANUAL

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ARITECH

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1. PURPOSE

This manual serves as a guide to the user when installing and using the Universal Node UN2011.

2. SCOPE

This manual is subdivided into different subsections and provides detailed information regarding the following:

- Section 3 provides a list of documentation that can be referred to if additional information regarding networking is required.
- Section 4 gives a description of what the Universal Node does and how it works.
- Section 5 describes the installation and commissioning of the Universal Node, including the precautions that must be adhered to.
- Section 6 gives an overview of the hardware and settings.
- Appendix A provides a detail specification of the Universal Node.
- Appendix B provides a list of Emulation Keys to be used when changing default settings

3. APPLICABLE DOCUMENTATION

	<u>Product Code</u>
1. Network Amplifier Operating and Installation Manual	MAN-043
2. FP2000 Series Analogue Addressable Fire Panel Reference Guide	LKFP2503
3. FP2000 Serial Communication Format	MAN-039
4. FP2000 Installation and Commissioning Manual	LKFP2003
5. FP2000 Network Configuration Guide	MAN-042

4. INTRODUCTION

4.1 GENERAL

The Universal Node provides an access point for external systems to the FP2000 ARCNET network. It links the FP2000 serial communication format, implemented via RS232, and the FP2000 ARCNET protocol, implemented via RS485 / Optical fibre.

Note: ARCNET is a registered trademark of Datapoint Corporation.

The basic function of the Universal Node may best be described by referring to Figure 1 and Figure 2 which depict the unit in typical applications.

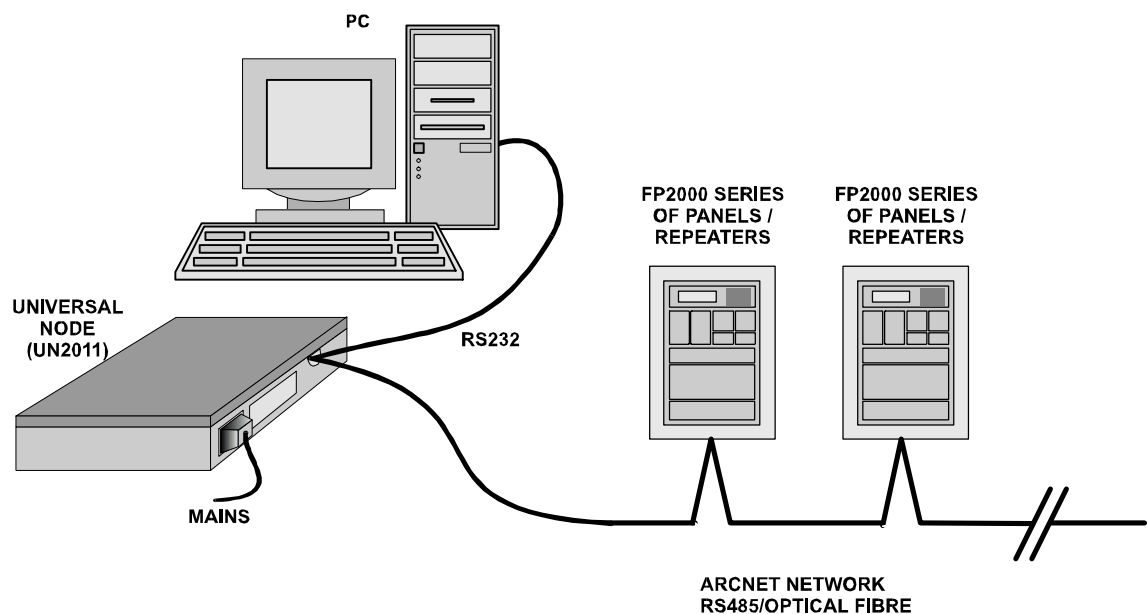


Figure 1: Universal Node - No Modem Application

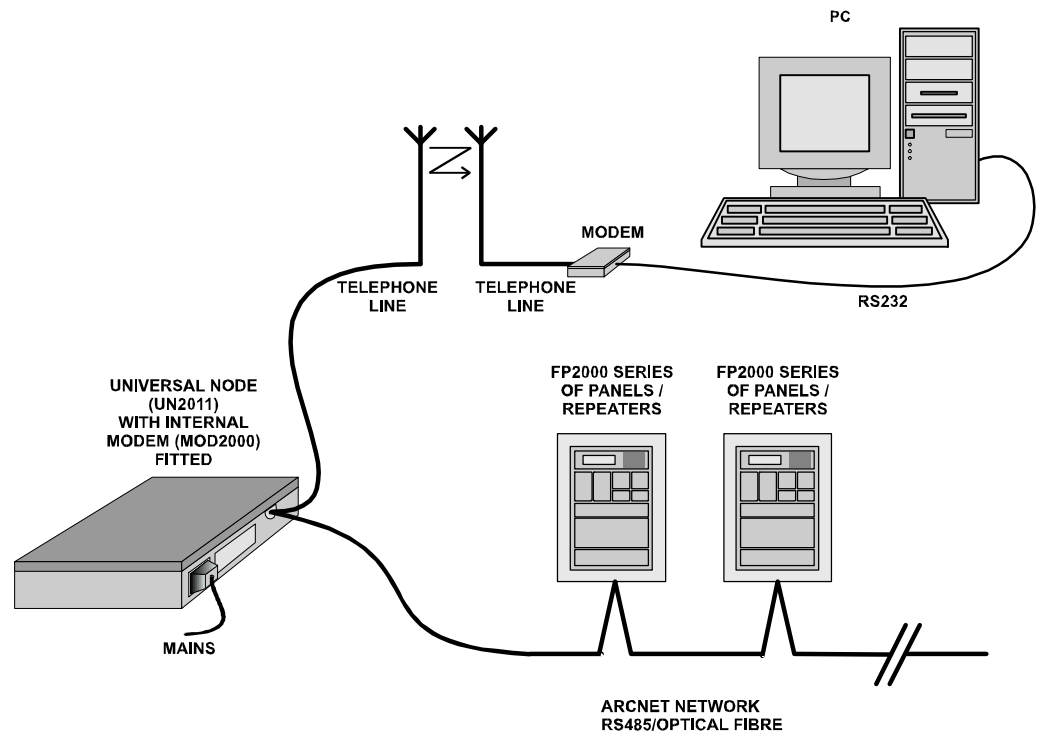


Figure 2: Universal Node - Modem Application

4.2 DESCRIPTION

4.2.1 General

The Universal Node UN2011 consists of the following (refer to Figure 3):

1. Strap to hold battery in place
2. Battery (to be ordered separately) - 12V 1.2Ah
3. Central Processor Card
4. NC2011/NC2051 Arcnet Card
5. Power Supply
6. Mainsplug with fuse
7. Transformer
8. Battery terminals (Note: When connecting battery observe correct polarity)
9. Mounting Holes (4) 5mm Diameter
10. Modem (MOD2000) - Optional
11. Serial Port (SER1)
12. Serial Port (SER2)
13. Modem Power connection
14. Fault Relay
15. Memory Lock and Service Switches
16. Start-up Switch

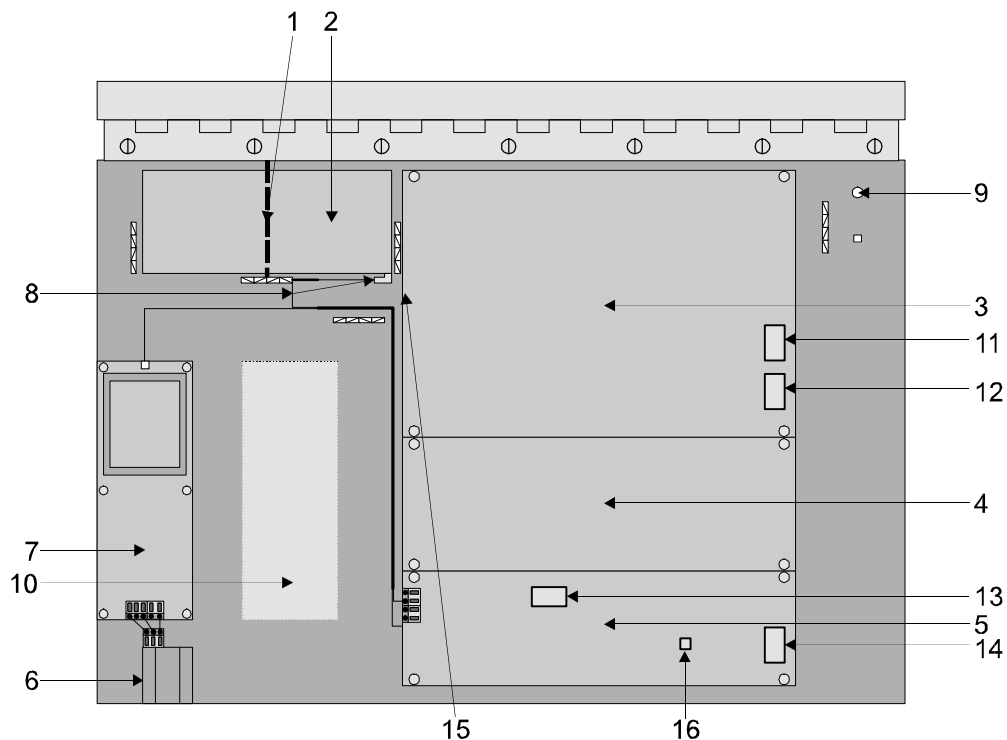


Figure 3: Universal Node UN2011

4.2.2 Power Supply

The Universal Node UN2011 is powered from mains. Provision is made for charging an internal battery to serve as a standby power supply if mains power fails. The battery is to be ordered separately and is to be installed by the User. Space is provided to mount the battery inside the unit. The power supply is fitted with a connection to supply power to a modem (MOD2000). A fault relay is supplied on the power supply board. This relay can be used to remotely indicate a faulty power supply (mains failure, battery not connected/under voltage etc.)

4.2.3 Arcnet interface

A NC2011 Network Card is fitted as standard to provide for interfacing to a two wire RS485 FP2000 Arcnet Network. Using Network Extension modules NE2011/NE2051 the unit can be configured to provide for conversion between optical and RS485 mediums as well as implementation of a wide range of topologies. For detail regarding Arcnet Network Topologies refer to the FP2000 Network Configuration Guide.

4.2.4 Interface to External RS232 Systems

Connections to external systems are made by means of a RS232 cable supplied with the Universal Node. Two RS232 ports are provided. These are referred to as SER1 and SER2.

A modem is required if the UN2011 is to be interfaced to a telephone line. The UN2011 is supplied without a modem. The modem (MOD2000) is to be ordered separately and is to be installed by the User. Space is provided inside the Universal Node to fit the Modem.

4.2.5 Configuring the Universal Node

The Universal Node is provided with default configuration settings for both serial ports SER1 and SER2. Only SER2 settings can be changed if required.

5. INSTALLATION

5.1 UNPACKING

Open the container and carefully remove the contents. Keep all packing material until correct operation of the equipment has been verified.

IF ANY EQUIPMENT IS DAMAGED

- Immediately notify the freight carrier.
- Notify the Supplier, who will arrange for the repair or replacement as appropriate.

CHECK THE CONTENTS AGAINST THE LIST BELOW

- Universal Node UN2011
- Mains Power Cable Plug
- RS232 Data Cable

REPORT ANY MISSING ITEMS TO THE SUPPLIER

5.2 PRECAUTIONS

To ensure safe operation and to keep the product safe, pay heed to the information, cautions and warnings in this manual. Failure to do so will violate the safety standards of design, manufacture and intended use of the equipment.



The above symbol, on equipment supplied, accompanies caution and warning messages summarised below:

- The Universal Node is intended for installation by qualified and trained personnel.
- Ensure that the correct procedures are followed when installing the equipment
- Ensure that the input voltage of the equipment corresponds with that of the power outlet before connecting it to mains power.

- Always disconnect unit from Mains power before opening it. Close the unit before connecting power
- Shock hazards may exist if the Universal Node is not properly grounded.
- Ensure that the lid of the Universal Node is in the closed position and that the two screws provided for fixing the lid in position are properly tightened.
- Any modification, maintenance or repair are permitted only by authorised personnel.

5.3 INSTALLATION

The following procedure is to be followed for installing a Universal Node (assuming that the ARCNET network design is completed):

5.3.1 Configuring and connecting the Arcnet Card to the FP2000 Network (refer to Figure 3 and Figure 4).

1. Ensure that mains power is disconnected from the Universal node before opening it; disconnect the battery.
2. Ensure that the default configuration of the Arcnet Network as detailed in 6.1 meets the requirement (node ID/ Operational Mode/Data Rate/Topology)
3. Configure and connect the Arcnet Card NC2011 as follows (Bus Topology Only*):
 - Remove the Jumper J1 on the Arcnet card (select Bus Topology mode*)
 - Determine if the Universal Node is positioned at an End-of-line position. If it is, then the RS485 Line must be terminated with an End-of-line resistor equal to the characteristic impedance of the cable. Insert jumper J1 next to the RS485 connections on the Network Extension Card. This terminates into a resistance of 120 Ω . Resistance can be added if the cable characteristic impedance is not 120 Ω .
 - Ensure that the screen of the RS485 cable is continued between nodes and that it is grounded at one point only. This can be done through inserting a jumper J2 on the network card.
 - Connect the RS485 wires

* For more detail on Topologies, Network Cards, Network Extension Cards as well as wiring refer to the Network configuration Guide.

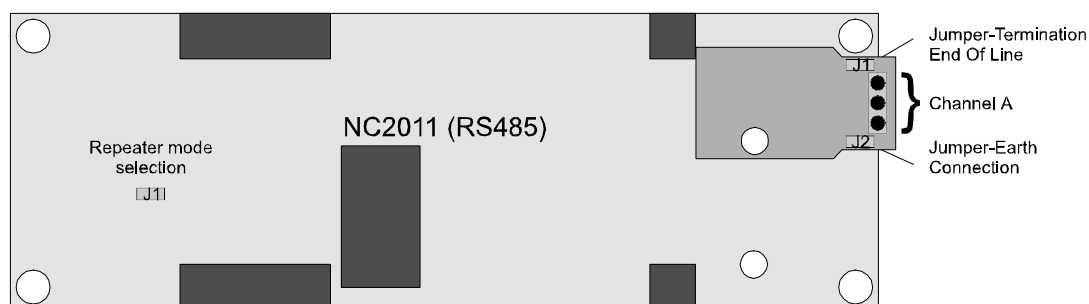


Figure 4: Network Card Connections

5.3.2 Installation of a battery

1. Ensure that mains power is disconnected before opening the unit.
2. Ensure that the battery selected complies with specification - refer to Appendix A.
3. Remove the protective cover from the double sided self adhesive tape and position the battery as shown in Figure 3. Fix it in position with the strap provided. Ensure that the strap is sufficiently tightened to prevent it from coming lose.
4. Connect the battery as shown. Observe correct polarity. Incorrect polarity can seriously damage the unit.

5.3.3 Connecting the Power supply and Fault Relay (refer to Figure 5)

1. Ensure that the mains power is disconnected before opening the unit.
2. Connect the fault relay as shown in Figure 5.
3. Route the wires away from sharp edges and corners and fix in position.

Note: The relay is shown in the fault condition.

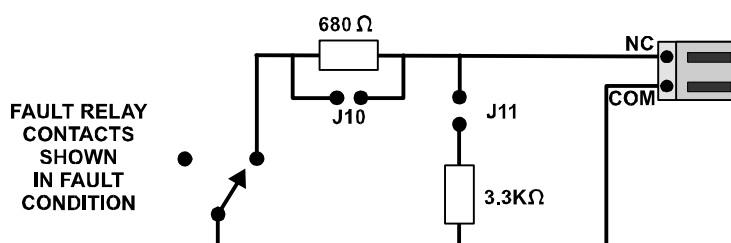


Figure 5: Fault relay Connections

5.3.4 Connecting the RS232 External System (refer to Figure 3)

1. Ensure that the Universal Node is disconnected from mains power before opening it.
2. Ensure that the default configuration of the Serial Port SER2 as detailed in section 6.1 meets that of the External RS232 System. If not, refer to section 6.2.
3. Check the RS232 cable
4. Connect the RS232 cable to the serial port SER2 on the CPU card as well as to the RS232 port of the External System.
5. Configure the RS232 system
 - Unique Node Identification
 - Configure RS232 protocol parameters
6. Connect mains to the Universal Node and start the external RS232 system.

The RS232 serial connection is via a 9-Pin D-type male connector. The table below describes the pin-outs of the connector as well as the requirements for the cable.

The required connections for the Universal Node are described in the following table:

Universal Node		Direction			RS232 System		
Pin number	Pin name				Pin name	Pin number	
9pf						25pf	9pf
1	DCD			<-----			
6	DSR			<-----	DTR	20	4
9	RI			<-----			
2	RX			<-----	TX	2	3
3	TX			----->	RX	3	2
					DCD	8	1
4	DTR			----->	DSR	6	6
					RI	22	9
5	GND			-----	GND	7	5
7	RTS			----->	CTS	5	8
8	CTS			<-----	RTS	4	7

9pf: 9 pin female D-type connector

25pf: 25 pin female D-type connector

5.3.5 Connecting the Modem to the Universal Node and a Telephone Line (refer to Figure 3 and Figure 6)

The following procedure describes the installation of the MOD2000 modem.

The MOD2000 modem is provided with a bracket for wall mounting. For installing this bracket into the Universal Node (refer to Figure 3):

1. Remove the protective cover from the double sided self adhesive tape on the rear mounting surface of the bracket supplied with the modem.
2. Position the mounting bracket inside the Universal Node as shown in Figure 3 and fix in position using the double sided self adhesive tape.
3. Before connecting the Modem to the Universal Node ensure that the battery and the mains power is isolated.
4. Carefully study the Modem User's Manual. For connecting the Modem to the Universal Node and Telephone Line (refer to Figure 2, Figure 3 and Figure 6).
5. Connect the Green Earth wire leading from the Modem to the Earth Stud inside the Universal Node. Please note that the modem and associated circuitry is only protected if this connection is made.
6. Connect the Power Harness leading from the modem to the Power supply. Observe correct polarity. Please note that the connector leading to the printer is not used. It is to be tied down using mounting studs provided inside the Universal node.
7. Connect the RS232 input on the modem to serial port SER2.
8. Connect the Telephone line to the Modem Protection Board (use the Telephone cable adapter supplied if required).
9. Slide the Modem into the bracket inside the panel and fix all cables in position using the hardware supplied (P-Clips and nuts). Ensure that the modem cannot slide out of the bracket if the universal node is turned upside down.
10. Restore Battery and Mains power to the Universal node and turn the Power Switch on the Modem ON.
11. Configure the serial port SER2 for modem configuration - refer to section 6.2.

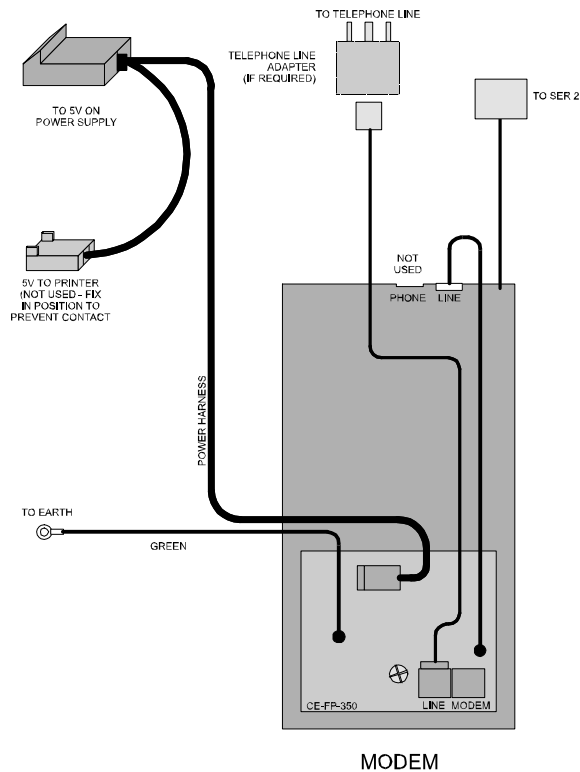


Figure 6: Modem MOD2000 Interconnection Diagram

5.3.6 MAINS POWER CONNECTION

When connecting the mains plug to a suitable power cord, ensure that Mains Live is connected to the terminal marked "L", Mains Neutral is connected to the terminal marked "N" and that Mains Earth is connected to the terminal marked "GND" or "⏏"

6. SOFTWARE CONFIGURABLE SETTINGS

6.1 DEFAULT SETTINGS

The UN2011 is supplied with a specific default configuration. For changing the default configuration refer to Section 6.2. The following default configuration settings apply to the UN2011:

Network Node address: 0/5 Note: Every node on the network must have a unique address

Network Operational mode: 15/15
Note: The operational mode must be the same for all items connected to the network.

Serial Ports :

SER1: Emulation Mode - this allows for connecting to the serial port of a computer to change default settings

SER2: Set-up Mode - this allows for direct connection to a computer to enable up/down load of site data (FPConfig application software) as well as emulation (Maintenance Manager Application software).

SER1 and SER2 protocol:

Baud rate - 9600

8 Data bits

1 Stop Bit

No Parity

DTE Equipment

Arcnet Port: Data Rate 156Kbps / Bus

6.2 CHANGING DEFAULT SETTINGS

Please Note: Changing the Default setting of Serial Port SER1 on the Universal Node is not possible.

The following procedure is recommended to change the Default Configuration Settings of the Universal Node:

1. Before you attempt to change the Software Default settings ensure that you have Windows 95 loaded on your system and that you have access to Hyper Terminal (Copyright 1995 - Hilgraeve Inc.) or similar application software
2. Connect SER1 of the Universal node to the COM1, COM2 or COM3 of your system
3. Configure COM1, COM2 or COM3 of your system using Hyper Terminal to the following:
 - Baud rate - 9600
 - 8 Data bits
 - 1 Stop Bit
 - No Parity
 - DTE Equipment
4. Using Hyper Terminal connect the relevant COM1,2 or COM3 port of the System to the Universal Node
5. Configure the Universal Node as required using the Emulation control keys as detailed in Appendix B. For detail on menus and how to navigate through them refer to the FP2000 reference Guide. An example on how to configure the serial port SER2 for a modem is given in section 6.3

6.3 MODEM SETTINGS

6.3.1 Modem Settings at the Universal Node

The following procedure is to be followed to configure serial port SER2 for a modem application:

- Give the Universal Node a Node ID :
SYSTEM\CONFIGURATION\ID. (Format 0/R or P/0) (R = Repeater, P = Panel)

For the Universal Node : the following option is available : un-m : 0/0.
Change this into the Node ID of the PC acting as a global repeater.
Example: 'PC Own Node ID =2 → un-m : 0/2

- Assign the serial port SER2 to be a modem port :
SYSTEM\CONFIGURATION\COMMUNICATION\PORT SETUP : SER(2) :
MODEM

- Complete your modem set-up :
SYSTEM\CONFIGURATION\COMMUNICATION\MODEM
The following parameters must be configured :
 - Wait for connection
 - Pause between dials
 - Max. dialling attempts
 - Init string : for example : ATL1E1&F0M1\N0\J0\Q3&Q0&W0S0=2
 - Dial command
 - Escape
 - Hang-up
 - Test
 - ID : This is the identification string of the Site. This string is being used to locate the events.

Note that these settings can be configured (depending on modem type) using the 'Modem' function in the SYSTEM\SET DEFAULT menu.

APPENDIX A : UNIVERSAL NODE SPECIFICATION

A 1. PERFORMANCE

A 1.1 DATA COMMUNICATION

Serial ports:	Two (2)
RS232 Protocol (Default):	8 Data Bits 1 Stop Bit No Parity 9600 Bits per second DTE equipment (On options refer to FP2000 Reference Guide)
Arcnet Port:	One(1)
RS485 Protocol (Default):	156 Kbps Bus Topology (On options refer to FP2000 Reference Guide)

A 1.2 POWER SUPPLY

Input Power :	230 V AC, 50Hz, 10VA
Fuse Type:	160mA, 250V, T
Battery Type:	1,2 Ah, 12V
Fault Relay:	Maximum switching current 2A @ 24VDC (refer to section 5.3.3) Maximum power rating 50WDC

A 2. PHYSICAL CHARACTERISTICS

Mass:	5 kg
Dimensions:	65 x 400 x 300 mm



A 3. ENVIRONMENTAL

Temperature: Operational:	0°C to 40°C
Storage:	-30°C to 65°C
Relative Humidity:	20 to 80% (non-condensing)

APPENDIX B : EMULATION CONTROL KEYS

No.	Description	Keyboard key
0	Reserved	ctrl @
1	Scroll	ctrl A
2	Display Alarm	ctrl B
3	Reserved	ctrl C
4	Print Screen	ctrl D
5	Alpha Numeric	ctrl E
6	Right Arrow	ctrl F
7	Reserved	ctrl G
8	Left Arrow	ctrl H
9	Silence Buzzer	ctrl I
10	Down Arrow	ctrl J
11	Reset	ctrl K
12	Disable	ctrl L
13	Enter	ctrl M
14	Test	ctrl N
15	Sound Sounder	ctrl O
16	Sounder Delay	ctrl P
17	Sounder Disable	ctrl Q
18	Silence Sounder	ctrl R
19	Fire Brigade Disable	ctrl S
20	Fire Brigade Delay	ctrl T
21	Reserved	ctrl U
22	Fire Brigade Stop	ctrl V
23	Reserved	ctrl W
24	Reserved	ctrl X
25	Reserved	ctrl Y
26	Up Arrow	ctrl Z
27	Exit	ctrl [
28	Reserved	ctrl \
29	Panel	ctrl]
30	All	ctrl ^
31	Fire Brigade signal	ctrl _